

Probabilistic Analysis

Probabilistic/conditional modeling was used to estimate the likelihood that a spill would contact a given region or resource at any time during the life of the proposed Unocal lease. This took into account the likelihood that a spill would occur in a particular location, the probability that a given type of material would be spilled, the probability that a spill would be of a particular volume and the likelihood that a spill would occur at a particular time of the year. The modeling showed the general flow of high, medium and light volumes of oil during three seasonal variations reaching the shoreline in the Bay.

Of pertinence to the Shore marine terminal is the fact that Unocal tankering and those tankers bound for the Shore marine terminal both follow the same established tanker lanes at least up to the point where Unocal-bound tankers pull out of the main lanes to the Unocal (ConocoPhillips) facility. The modeling found that oil spills along the route used by these tankers through the Bay predominantly affect waters of the ship channel, where they are moved back and forth with tidal currents. This effect is greatest in the north part of San Francisco Bay and in San Pablo Bay. Closer to the Golden Gate, spills tend to be flushed from the Bay on ebb tides. Most waters within about 2 km of the ship channel are subject to at least a 30 percent change of contact from crude oil spills (slightly less for product spills). The likelihood of contact declines with distance from the ship channel, especially over broad expanses of shallow water and mudflats. Land subject to the greatest chance of contact is in Carquinez Strait, Mare Island, along the southern shore of San Pablo Bay, from Point San Pablo to Point Richmond, the eastern shore of the Tiburon Peninsula, and Angel Island. The likelihood of moderate or heavy oiling follows the same pattern, with the greatest chance found in deeper waters of the ship channel. Point San Pablo and Angel Island are each subject to a 12 to 17.5 percent chance of moderate oiling from a crude oil spill and up to a 3 percent chance of heavy oiling.

Scenario Modeling

This modeling involved the display of individual, various-sized Bay scenarios representing spills of crude and product. These spills were meant to examine the severity of potential impacts on sensitive resources, based on reasonable worst-case oil spill scenarios. The quantity of oil released in each scenario was determined after considering historical spill sizes and data on engineering and design of tankers and transfer facilities. Scenarios included both ones specific only to the Unocal Terminal, as well as scenarios for tinkering within the traffic lanes. *Of note, those scenarios within the Bay or coastal traffic lanes can be applied to any assessment of impacts interested in consideration of the oil spread from a tanker spill.*

Spill size releases included 500 barrels (bbl) of product at the Unocal Terminal, 1,000 barrels (bbl) of crude at the Unocal Terminal, 1,000 bbl of crude from the tanker lane at the east end of Carquinez Strait, 20,000 bbl of crude along the tanker route off of the Unocal Terminal, 20,000 bbl of crude northwest of the Unocal Terminal near the Mare Island breakwater, and 100,000 bbl of crude each in the Precautionary Zone near